

ABSTRACT OF THE DISCLOSURE

The present invention relates to epitaxial, electrically conducting and mechanically robust, cubic nitride buffer layers deposited epitaxially on biaxially textured substrates such as metals and alloys. The invention comprises of a biaxially textured substrate with epitaxial layers of nitrides. The invention also discloses a method to form such epitaxial layers using a high rate deposition method as well as without the use of forming gases. The invention further comprises epitaxial layers of oxides on the biaxially textured nitride layer. In some embodiments the article further comprises electromagnetic devices which may have superconducting properties.

1. A substrate having a biaxially textured surface, the substrate being made of a metal or an alloy, and a buffer layer of cubic nitride deposited epitaxially on the biaxially textured surface of the substrate.